



RAIL NETWORK TELECOMMUNICATION

SPECIFICATION BBG 2394 VERSION 1.00

SPECIFICATION FOR UHF TRUNKED AND CONVENTIONAL MOBILE RADIO

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Contents

I.	Document Authorisation	I
II.	Distribution	I
III.	Document Change History	I
IV.	Changes since Last Revision	I
V.	List of Abbreviations and Acronyms	II
VI.	Relevant Documentation Applicable	III
1.	INTRODUCTION	1
2.	SCOPE	1
3.	COMPLIANCE	1
4.	TENDER REQUIREMENTS	2
5.	TECHNICAL REQUIREMENT	3
6.	TRAINING	5

I. Document Authorisation

II. Distribution

Once updated, a copy of the latest revision will be published on the document management system, "Project Wise".

III. Document Change History

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	August 2014	Graeme Daly	New Document

IV. Changes since Last Revision

CLAUSES	DESCRIPTION

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
AC	Alternating Current
Ah	Ampere hour
EC Amendment Act	Electronic Communications Amendment Act No.1 2014
BS	British Department of Trade and Industry Specification
dBm	Decibel relative to 1 milli watt
LED	Light Emitting Diode
m	Metre
mm	Millimetre
MPT	Minister of Post and Telecommunication
PTT	Press – To - Talk
RBU	Radio Base Unit
RCU	Remote Control Unit
RF	Radio Frequency
RTO	Radio Train Order
Rx	Receive
TFR	Transnet Freight Rail
THD	Total Harmonic Distortion
Tx	Transmit
UHF	Ultra High Frequency
V	Volt
W	Watt
Char	Character
CTC	Central Train Control
CTCSS	Continuous Tone Code Squelch System
dB(A)	Sound pressure A-weighted
DC	Direct Current
GPS	Global Positioning System
ICASA	Independent Communication Authority of South Africa
ID	Identification
IP	International Protection
mW	Milli watt
RF	Radio Frequency
TCO	Train Controlling Officer
UHF	Ultra High Frequency
VCO	Voltage Control Oscillator
VSWR	Voltage Standing Wave Ratio
NTC	National Test Centre
RFQ	Request for quotation

VI. Relevant Documentation Applicable

Where there is a conflict between the SPECIFICATION and SCHEDULE OF REQUIREMENT DOCUMENT, the SCHEDULE OF REQUIREMENT DOCUMENT takes precedence.

The equipment must comply with the latest issue of the following applicable specifications:

DOCUMENT NO.	DESCRIPTION	LOCATION
ISO 9000	Quality Management Systems.	External
ETSI EN 300 086	European Telecommunication Standards for Radios.	External
GG 3736	Electronic Communications Amendment Act No. 1 2014	External
BS 3939	British Department of Trade and Industry Specification:	External
MPT 1317	Code of Practice for Transmission of Digital Information over Land Mobile Radio Systems.	External
MPT 1327	A signalling Standard for Trunked Private Mobile Radio Systems	External
MPT 1343	System Interface Specification for Radio Units to be used with Commercial Trunked Networks.	External
BBD 8635 Version 8 22 May 2014	Technical specifications and methods of measurement for angle modulated equipment.	Internal
IP 54	Dust protected. Protected against splashing of water.	External
IP 55	Dust protected. Protected against water jets.	External
IP 57	Dust protected. Protected against the effect of immersion between 15 cm and 1 m.	External
IP 67	Totally protected against dust. Protected against the effect of immersion between 15 cm and 1 m.	External

1. INTRODUCTION

Transnet utilise Mobile - Trunked and Conventional radio equipment, in the UHF frequency band to communicate between train control officers and trains, for the control of train movements, shunting movements, flagmen, shipping and harbours operations, etc.

2. SCOPE

- 2.1. This specification is for the supply of the above radio equipment and accessories as per attached Schedule of Requirements. **(Appendix A)**.
- 2.2. This specification will provide Bill of Quantities and Cost Schedule, as per attached. **(Appendix B & C)**
- 2.3. It is envisaged that equipment for this enquiry will be ordered and supplied to Transnet Freight Rail's nominated address. **(Appendix D & E)**.

3. COMPLIANCE

Item	Description	Comply Y/N	Remarks
3.1.	Tenderers must comply with the clause-by-clause statement of the tender requirements provided below. *Failure to comply will exclude Tenderers from consideration.		
3.2.	Alternative offers, will be considered at Transnet Freight Rail's discretion, provided that such offers provide equivalent functionality to what has been specified in this document. Separate compliance documents must be completed for each alternative offer. (Appendix A- B & C – D & E) *Failure to comply will exclude Tenderers from consideration.		
3.3.	Only the successful bidder is obligated as per the Act to ensure Transnet is in possession of a valid frequency spectrum licence, for the Radio's to be supplied. A reference must be obtained from Transnet Frequency Spectrum Manager Mr Freddie Visser, at Freddie.Visser@Transnet.net or at 011 583 0125 prior to the delivery. *Failing to adhere to the above will result in the cancellation of this transaction and the matter will be reported to ICASA.		
3.4.	Radio's that comply with Technical Specifications BBD 8635 version 8, dated 21 May 2014 and this specification BBG 2394 version 1.00, dated 8 September 2014, but have not yet been submitted to Transnet for evaluation, must be submitted to the Transnet National Test Centre (NTC) at 2 Foley St. Fictoria, Krugersdorp, Gauteng, attention Mr Chris Muller 011 774 8229 prior to, or, within 5 (Five) working days after the tender has closed. Approval letter from Transnet NTC must be included in the Tender/RFQ for each product offered. *Failure to comply will exclude Tenderers from consideration.		

Item	Description	Comply Y/N	Remarks
3.5.	All programming software, accessories, test interface box / cables, service manuals, ICASA certificate, etc. must submitted with the radio when being delivered to the NTC for evaluation. Refer to document BBD 8635, for requirements. *Failure to comply will exclude Tenderers from consideration		
3.6.	This Specification BBG 2394 version 1.00, date 8 September 2014 must be read in conjunction with Technical Specification and Method of Measurement for Angle Modulated Radio Equipment BBD 8635 Version 8, dated 21 May 2014. *Failure to comply will exclude Tenderers from consideration		
3.7.	The equipment offered must be ICASA equipment type approved and a certificate per model offered must be submitted. *Failure to comply will exclude Tenderers from consideration.		
3.8.	Tenderers must provide a copy of their current ICASA Radio Dealers certificate. (Certified copy to be provided) *Failure to comply will exclude Tenderers from consideration.		
3.9.	Radios will be required to be batch tested by Transnet NTC prior to delivery or shipment. *Failure to comply will result in the termination of the order when radio equipment is delivered.		

4. TENDER REQUIREMENTS

Item	Description	Comply Y/N	Remarks
4.1.	Tenderers shall submit a clause-by-clause statement of compliance for equipment / items offered on the attached Schedule of Requirements (Appendix A) in the columns provided. *Failure to comply will exclude Tenderers from consideration.		
4.2.	Tenderers shall complete the attached Cost Schedule (Appendix B & C) for equipment. *Tenderers will be excluded from supplying any items not priced.		
4.3.	Tenderers shall complete the attached Delivery Schedule (Appendix D & E) for equipment. *Tenderers will be excluded from supplying if delivery dates are not included, as this will be a deciding factor.		

5. TECHNICAL REQUIREMENT

Item	Description	Comply Y/N	Remarks
5.1.	Technical specifications for items offered must be submitted. *Failure to comply will exclude Tenderers from consideration.		
5.2.	The Receiver loudspeaker must comply with a sound pressure level equal to or better than ≤ 84 dB (A) at 300 mm. Refer to document BBD 8635 version 8, dated 21 May 2014 for test method.		
5.3.	The Transmitter deviation must be between 300 - 500 Hz from sound pressure level of 80 dB (A) at the microphone. Refer to document BBD 8635 version 8, dated 21 May 2014 for test method.		
5.4.	Radios must be capable of handling a frequency switching bandwidth of 15 MHz on both transmit and receive between channels with no degradation.		
5.5.	Radios must be programmable in the 400 – 470 MHz band without signal degradation nor component or board changes - to be specified.		
5.6.	Radios must operate with 12, 5 kHz channel spacing.		
5.7.	The Mobile radio RF output power must be software selectable between 5 and 25 watts, or to be specified.		
5.8.	In conventional mode, the Mobile radio must have a minimum of 16 channels. (Can specify alternative number of channels)		
5.9.	The display on the radio must have a minimum of twelve alpha numeric characters.		
5.10.	It must be possible to assign an alpha – numeric label to each conventional channel.		
5.11.	Radios must be IP54 compliant or better.		
5.12.	Birth date of radio. (when was it released into the market)		
5.13.	Date expected to be withdrawn, superseded or replaced from the market. (Manufacture official letter to be provided)		

Item	Description	Comply Y/N	Remarks
5.14.	Warranty period, exceptions, terms and conditions to be indicated.		
5.15.	Warranty turn – around time for repairs to be specified in working days.		
5.16.	Supplier must prove that warranty repairs and technical support can be carried out on its own premises.		
5.17.	Spares and technical support must be readily available locally for a period of at least seven years from date of purchase.		
5.18.	All equipment returned from repairs must be fully aligned to meet the specification of compliance. Certification must be issued and random batch testing will be performed.		
5.19.	Service manuals must be in English and available on CD-ROM.		
5.20.	Programming software must be on CD-ROM.		
5.21.	Programming software must be Microsoft Windows 7 compatible.		
5.22.	The selection between Trunked and Conventional modes must be easily selectable.		
5.23.	Trunked Mobile radio must operate in accordance with MPT 1327 and MPT 1343 standards.		
5.24.	Trunked radio Mobile must have a User Selectable inclusive and exclusive Group call facility catering for 100 Groups.		

6. TRAINING

Item	Description	Comply Y/N	Remarks
6.1.	Tenderers must be in a position to provide training on all products offered, country wide.		
6.2.	Training required on products will be indicated in the schedule of requirements.		

END OF DOCUMENT